Applicant: Kaisa Putkisto et al.
Application No.: 10/507,240
Art Unit: 1734

Claim Listing

1–7. (cancelled)

8. (currently amended) A web and a web coating device comprising:

a web having a first side and a second side opposite the first side, the web forming a substrate ~~having applied to the first side a layer of powder formed of electrically charged particles~~;

an electrically conducting roll forming a grounding electrode mounted for rotation and having an outermost insulating surface positioned engaged with the second side of the web ~~opposite the layer of powder formed of electrically charged particles~~;

a charging electrode positioned opposite the grounding electrode, and over the first side of the web [[the]] and a layer of powder applied on the web where the web is engaged with the electrically conducting roll; and

a heated roll, having an outer surface in nipping engagement with the electrically conducting roll, to define a nip therewith, wherein the web passes through the nip and the first side of the web and the layer of powder thereon engages the heated roll outer surface, the layer of powder forming a partly melted layer where it engages the heated roll.

9–10. (canceled)

11. (previously presented) The web and web coating device of claim 8, wherein the heated roll and the electrically conducting roll are arranged to be at the same potential.

12. (previously presented) The web and web coating device of claim 8, further comprising a resilient roll in nipping engagement with the heated roll and pressing the web and the layer of powder forming the partly melted layer against the heated roll.

13. (previously presented) The web and web coating device of claim 8 wherein the web comprises papermaking fibers.

14. (previously presented) A method for coating a web comprising the steps of:

passing a continuous web having a first side and a second side between a charging unit of powdery particles, the charging unit having a corona charging electrode, and a rotating electrically conductive grounding roll having an electrically insulating surface so that the web second side is in contact with the electrically insulating surface;

applying to the first side of the web a layer of powdery particles which are charged in the charging unit while the web second side is engaged against the insulating surface of the grounding roll, wherein the grounding roll is held at a selected potential; and

a further step of at least partially melting a binder of the powdery particles to fix the coating powder to the web in a calender stack comprising the grounding roll at the selected potential in nipping engagement with a heated roll.

15. (previously presented) The method of claim 14, further comprising the step of charging the powdery particles by tribocharging before applying the layer of powdery particles to the first side of the web.

16. (previously presented) The method of claim 14, wherein the calender stack comprises the grounding roll, a resilient roll, and the heated roll therebetween.

17. (previously presented) The method of claim 14, wherein the further step comprises:

engaging the rotating electrically conductive grounding roll at a nip with the heated roll; and

passing the web through the nip with the first side of the web and the layer of powdery particles thereon engaging an other surface of the heated roll, so that the layer of powderery particles forms a partly melted layer where it engages the heated roll.

18. (previously presented) The method of claim 17, wherein the heated roll and the electrically conductive grounding roll are at the same potential.

19. (previously presented) The method of claim 17, wherein the further step further comprises:

engaging the heated roll with a resilient roll at a nip; and

passing the web and the layer of powdery particles forming the partly melted layer through the nip so as to press the web and the layer of powdery particles forming the partly melted layer against the heated roll.

20. (previously presented) The method of claim 14 wherein the continuous web comprises papermaking fibers.

21. (previously presented) A method for coating a web comprising the steps of:

passing a continuous web having a first side and a second side between a charging unit which employs tribocharging to charge powdery particles, and a rotating electrically conductive grounding roll having an electrically insulating surface so that the web second side is in contact with the electrically insulating surface;

applying to the first side of the web a layer of powdery particles which are charged in the charging unit while the second side is engaged against the insulating surface of the grounding roll, wherein the grounding roll is held at a selected potential; and

a further step of at least partially melting a binder of the layer of powdery particles to fix the coating powder to the web in a calender stack comprising the grounding roll and a heated roll.

22. (previously presented) The method of claim 21, wherein the calender stack comprises the grounding roll, a resilient roll, and the heated roll therebetween.

23. (previously presented) The method of claim 21, wherein the further step comprises:

engaging the rotating electrically conductive grounding roll at a nip with the heated roll; and

passing the web through the nip with the first side of the web and the layer of powdery particles thereon engaging an outer surface of the heated roll, so that the layer of powdery particles forms a partly melted layer where it engages the heated roll.

24. (previously presented) The method of claim 23, wherein the heated roll and the electrically conductive grounding roll are at the same potential.

25. (previously presented) The method of claim 21, wherein the further step ~~of~~ further comprises:

engaging the heated roll with a resilient roll at a nip; and

passing the web and the layer of powdery particles forming the partly melted layer through the nip so as to press the web and the layer of powder forming the partly melted layer against the heated roll.

26. (previously presented) The method of claim 21 wherein the continuous web comprises papermaking fibers.